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ABSTRACT

The question of whether certain teaching behaviors as perceived by students are related to the students' achievement in different subject areas is investigated. A revised questionnaire, Our Class and Its Work (OCIW), assesses student perceptions of teacher behavior along the following nine scales: variability; enthusiasm; task-orientation; criticism; opportunity to learn; use of structuring comments; multiple levels of questioning; mismanagement; and sustainity. The OCIW was administered in two Chicago schools: to 136 parochial school students in grades 2 through 8, and to 96 public school students in grade 4. In the parochial school, two years of total reading, vocabulary, language arts, mathematics concepts, mathematics computation, social studies, and science achievement scores on the Science Research Associates Achievement Tests were obtained. In the public school, two years of total reading, mathematics concepts, mathematics problem solving, and total mathematics achievement scores from the Iowa Test of Basic Skills were obtained. In both schools, OCIW scales and previous academic achievement were entered as independent variables in a multiple regression equation predicting academic achievement for the current year. Results indicated that several OCIW scales are significant predictors of academic achievement and vary across academic subjects. (RL)

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Students' Perceptions of Effective Teaching in Different Subject Areas

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Recent summaries and analyses of the studies which relate teaching process to a student product have identified a number of teaching behaviors which consistently correlate with student learning gains (Brophy & Evertson, 1976; Brophy, 1979; Dunkin & Biddle, 1974; Gage, 1978; Good, 1979; Rosenshine & Furst, 1973; Rosenshine, 1979; Medley, 1977; Medley, 1979). In one of the first and most comprehensive reviews of the studies on teaching behaviors and student achievement, Rosenshine and Furst (1973) examined these studies and concluded that students learned best when the following teaching characteristics were present: clarity, variability in teaching methods and materials, enthusiasm, task-orientated behavior, indirectedness (questioning rather than lecturing), student opportunity to learn the material, teacher use of structuring comments, multiple levels of questions or cognitive discourse, and avoidance of criticism. The questionnaire, Our Class and Its Work, (Eash, Rasher, & Waxman, 1979) is an instrument which originally assessed student perceptions of teacher behavior along the nine dimensions previous discussed. Some slight revisions of the initial instrument have been made based on a factor analysis of the preliminary data collected from this questionnaire. This instrument has reliability and validity, and the general framework in which this instrument was developed and tested out have been previously discussed (Eash, Rasher, and Waxman, 1979).

Given an instrument which would permit students to report descriptively on these behaviors, it was assumed that students would accurately indicate which of these behaviors were present or absent in the repertoire of a classroom teacher's behavior. Further, student ratings of instructors have a particularly good history. Rosenshine (1971) has found that the use of student ratings as predictors of the general effectiveness of teachers have yielded slightly stronger results than observer ratings. Talmage and Eash

(1979), Korb (1977), Anderson, Walberg, and Welch(1969), Eash, Rasher, and Waxman (1979), and Eash and Talmage (1975) have also found that students are valid sources of information on teachers' classroom performance.

In another context, student perceptions of teacher behavior have other important consequences. First, they have been found to be effective feedback to classroom teachers (Gage, Runkel, & Chatterjee, 1963). Second, they provide useful data on classroom functioning (Walberg, 1976; Eash & Talmage, 1975; Talmage and Eash, 1979). Finally, student perceptions appear to mediate student achievement (McDonald & Elias, 1976; Strayrook, Corno, & Winne, 1978).

Effective Dimensions of Teaching Across Subjects

Analyzing teacher effectiveness across subject matters have been ignored by several of the major reviews on teaching (Gage, 1979; Waxman and Walberg, in press). As Gage (1979) painstakingly points out, "the orientation conveyed is that the field of research on teaching has been engaged in a search for general relationships between teaching processes and student achievement or attitude--relationships that are general across say, various subject matters and grade levels" (p. 265). Others have similarly acknowledged that differences in teachers effectiveness exist across subject matters (Berliner, 1976; Brownell, 1948; Coleman, 1975; Good, 1979; McDonald & Elias, 1976; Stallings, 1976; Schulman, 1974).

The purpose of this study is to investigate whether students' perceptions of their teachers' behaviors can be a significant predictor of students' academic achievement. The objective of the study is to investigate whether certain teaching behaviors are related to students' achievement in different subject areas.

Previous Results and Findings

In an initial analysis, Our Class and Its Work was administered in six Chicago Public Schools in 23 classrooms to a total of 183 students. In addition, two years of total reading and math achievement scores on the Iowa Test of Basic Skills were obtained for all students. All nine scales plus the previous year's reading achievement score were entered as independent variables into a multiple regression equation predicting the present year's reading achievement. The results showed that the higher achieving reading students perceived their teachers to be high in indirectedness and providing opportunities to learn criterion material. A similar regression equation, predicting present year's math achievement from the nine scales and the previous year's math achievement showed that higher achieving math students perceived their teachers to provide opportunities to learn criterion material. Thus, our preliminary findings indicated that one scale--opportunity to learn--was a significant predictor of both reading and math achievement and another scale-teacher indirectedness--was a predictor of reading achievement (Eash, Rasher, and Waxman, 1979).

Development of the Revised Questionnarie

Based on a factor analysis of the previous instrument, nine scales were identified, most of which were consistent with the original nine scales but with two being sufficiently different as to require new names. The nine revised scales were named: variability, enthusiasm and interest, task orientation, criticism, opportunity to learn criterion material, use of structuring comments, multiple levels of questions, mismanagement, and sustinuity.

The basic teacher behaviors for the nine original scales were derived primarily from the descriptions provided by Rosenshine and Furst (1973). Some shortening of definitions of the nine revised scales were done, but they

remained consistent with the nine original scales and are as follows:

1. Variability. The extent to which the teacher is flexible in the classroom in materials and activities and brings in extra resources and materials.

2. Enthusiasm and Interest. The extent to which the student sees the teacher evidence excitement and interest in the teaching.

3. Task-orientation. The extent to which the classroom is "businesslike" and students spend most of their time working on schoolwork.

4. Criticism. The extent to which the teacher provides the student with positive and negative feedback.

5. Opportunity to learn criterion material. The extent to which students have the opportunity to do their work and complete it.

6. Use of structuring comments. The extent to which the teacher gives directionality, particularly ideationally, to instruction.

7. Multiple levels of questioning. The extent to which the teachers asks questions of different levels and adjusts them appropriately in the classroom.

A definition of the two new scales follows:

8. Mismanagement. The extent to which the teacher is not able to conduct the classroom without instruction being interrupted and students becoming confused.

9. Sustinuity. The extent to which the teacher maintains continuity of instructional effort in the classroom and sustains several instructional activities at the same time.

A total of 53 items were included in this revised form and a response scale of four points were used to permit students a greater differentiation of response: strongly agree, agree, disagree, or strongly disagree.

Current Analyses and Results

The revised Our Class and Its Work was administered in a Chicago Parochial school in seven classrooms (grades 2 thru 8) to a total of 136 students. In addition, two years of total reading, vocabulary, language arts, math concepts, math computation, social studies, and science achievement scores on the Science Research Associates Achievement Tests were also obtained. Unfortunatley, missing data on several of the achievement tests and our desire to use a listwise deletion of these data reduced the sample drastically for our regression equations. All nine scales of the instrument plus the previous year's academic achievement were entered as independent variables into a multiple regression equation predicting the present year's academic achievement. A series of seven regression equations were run with each separate SRA achievement test.

The results summarized in Table 1 indicate that inclusion of the Our Class scales to the multiple regression equation added a significant amount to the R^2 (Squared Multiple Correlation Coefficient) in each regression equation. Table 1 also indicates that the scale, Use of Structuring Comments is a significant predictor of language arts and social studies achievement. This scale has a relatively high, positive partial correlation with the math achievements too. Meanwhile, we can see that the partial correlations on this scale are quite small for both reading and vocabulary achievment. The scale, Opportunity to Learn is again a significant predictor of math concept achievement. Though the correlations on this scale remain fairly consistent for all the achievement tests, the partial correlations or the correlations with the influence of the preachievement test removed vary across achievement tests. The scale, Multiple Levels of Questionning is a significant predictor of vocabulary achievement and the scale of criticism is another significant

Table 1. Regression Equations Relating Our Class Scales and Student Achievement

	Pre R^2	Variability		Structuring Comments		Management		Sustainity		Enthusiasm & Interest		Opportunity to Learn		Multiple Levels		Criticism		Task Orientation		Post R^2 with Our Class Scales	N
		r	rp	r	rp	r	rp	r	rp	r	rp	r	rp	r	rp	r	rp	r	rp		
1. Reading Achievement	.59	.13	.03	.26	-.02	.07	.09	-.08	-.16	-.01	-.17	.16	-.04	.06	-.04	-.17	-.07	.17	.16	** .64	64
2. Vocabulary Achievement	.65	.16	.24	.27	.04	-.15	-.18	-.07	-.01	.16	.10	.20	.05	.30	.26	-.17	.08	.16	** .34	*** .73	63
3. Language Arts Achievement	.59	.09	.08	** .38	.34	-.04	-.01	-.09	-.19	.22	.16	.19	.03	.17	.18	-.12	.20	.23	* .28	*** .69	64
4. Math Concept Achievement	.52	.13	.11	.36	.19	.00	.01	.03	-.01	.17	.12	* .30	.25	.21	.10	-.20	.04	.09	.12	** .57	64
5. Math Computation Achievement	.69	.09	.12	.30	.24	-.01	.10	-.16	-.16	.06	-.07	.27	.02	.05	-.05	-.19	.10	.06	.06	** .73	63
6. Social Studies Achievement	.80	.08	.12	** .42	.37	-.12	-.19	-.09	-.05	.17	.19	.26	.14	.21	.17	-.08	** .24	.19	.20	*** .84	67
7. Science Achievement	.41	.09	.10	.21	.08	.03	.09	.12	.18	.08	.02	.23	.15	.13	.02	-.21	-.09	.13	.08	* .47	66

* = F significant at .05 level
** = F significant at .01 level
*** = F significant at .001 level

r = correlation coefficient
rp = partial correlation

predictor of social studies achievement. The partial correlations for these two scales also vary greatly across different achievement tests. The scale, Task Orientation is a significant predictor of both vocabulary and language arts achievement and though the partial correlations on this scale show small variation, the scale is the most consistent across all subject areas.

The revised Our Class form was also administered in a Chicago Public school in four, fourth grade classrooms to a total of 96 students. Two years of total reading, math concepts, math problem solving, and total math achievement scores from the Iowa Test of Basic Skills were also obtained for all these students. All nine scales of the instrument[1] plus the previous year's academic achievement were entered as independent variables in a multiple regression equation predicting this year's academic achievement. A series of four regression equations were run with each separate achievement test. Table 2 summarizes the results from these analyses. The Our Class scales again added a significant amount to the R^2 in each of the regression equations. The scale, Variability is a significant predictor of both reading and total math achievement while the scale, Task Orientation is a significant predictor of math problem solving achievement.

Discussion of Results

The results of these preliminary and current findings indicate that several scales of Our Class and Its Work are significant predictors of academic achievement. The results lend some weight to the belief that teachers' effectiveness is specific to each academic subject. Table 3 summarizes the results of the preliminary and current findings.

Table 2. Regression Equations Relating OCIW Scales and Student Achievement

	Pre R^2	Variability		Structuring Comments		Management		Sustainity		Enthusiasm & Interest		Opportunity to Learn		Multiple Levels		Criticism		Task Orientation		Post R^2 with Our Class Scales	N
		r	rp	r	rp	r	rp	r	rp	r	rp	r	rp	r	rp	r	rp	r	rp		
1. Reading Achievement	.54	.20	.22*	-.01	.03	-.14	-.11	-.18	-.03	.27	.12	.13	.05	.15	.14	.00	.06	.23	.06	.57*	96
2. Math Problem Achievement	.51	.22	.20	-.08	-.08	-.02	.05	-.00	.13	.33	.19	.15	.07	.09	.00	.03	-.07	.36	.22*	.59***	96
3. Math Concept Achievement	.52	.20	.18	-.03	.09	-.07	-.01	-.17	-.04	.28	.19	.14	.11	.11	-.02	-.01	.03	.23	.14	.56**	96
4. Total Math Achievement	.64	.23	.23*	-.07	.02	-.05	.05	-.08	.09	.33	.19	.15	.09	.11	-.04	.01	-.04	.33	.19	.69***	96

* = F significant at .05 level
** = F significant at .01 level
*** = F significant at .001 level

r = correlation coefficient
rp = partial correlation coefficient

Table 3. Significant Our Class Scales Predicting Academic Achievement

Achievement Test	Significant Our Class Scales
Reading	Variability; Indirectedness^2; Opportunity to Learn
Math Concepts	Opportunity to Learn;
Math Problem Solving	Task Orientation;
Total Math	Variability; Opportunity to Learn;
Vocabulary	Multiple Levels of Questionning; Task Orientation;
Social Studies	Structuring Comments;
Language Arts	Structuring Comments; Task

The scales, Task Orientation and Opportunity to Learn are the scales that most frequently significantly predict academic achievement. This seems to be consistent with much of the current research thrust that contends that direct instruction or a strong academic focus are the most significant predictors of academic achievement (Gage, 1978; Brophy, 1979; Good, 1979; Medley, 1977, 1979; Rosenshine, 1979). Meanwhile, the scale, Structuring Comments is a significant predictor that in those subject areas it is important for a teacher to carefully structure his/her comments and give guidance to students in instructional assignments and would limit open endedness of assignments. The significance of the scale, Variability suggests that more effective teachers in reading and math use wider instructional assignments and try new and different approaches in their classrooms. The scale, Multiple Levels of Questionning reveals that effective teachers in vocabulary ask questions with variable levels of cognitive difficulty that all students can answer and that they also encourage students to ask questions. This finding is consistent with the results of Evertson, Anderson, & Brophy (1978) who similarly found that the use of student talk or questions is significant within the context of a teacher orientated or task orientated classroom.

Educational Importance

Feedback based on classroom observations can make teachers aware of problems and it can also help them improve their teaching (Brophy, 1979; Good & Brophy, 1974; Eash & Talmage, 1975; Talmage & Eash, 1979; Moore, Schaut, & Fritzges, 1979). Unfortunately, observational techniques have several limitations. They are intrusive on the classroom environment, require training of observers, are prone to subject deception, and are not cost/effective. However, student self-report instruments hold a tremendous advantage over observational techniques in that they can be standardized, involve pooled judgements of all students in the class, and they are economical and efficient in obtaining large amounts of data in a short amount of time (Anderson & Walberg, 1974; Eash & Talmage, 1975; Talmage & Eash, 1979; Neilson & Kirk, 1974). Student perceptions are not a "slice of time orientated," they reflect what students feel is happening to them in the classroom, a subtlety of difference which is too widely ignored when adults are observing children. Moreover, it is necessary to relate these observations to student behaviors which are desired products of the teacher's behavior. We recognize that student growth in achievement tests are limited measures of classroom learning, but they are one of the most widely accepted indexes of educational goals by the public. Until something better comes along and achieves broad acceptance, they will remain important criteria in teacher effectiveness studies.

Our research has indicated that students' perceptions of teaching behaviors do affect students' achievement. We have also partially shown the impact of teacher behaviors on student achievement may depend on the subject being taught. Our teacher education programs are destined to fail to make much progress without greater clarity on teacher behaviors in

natural settings and how they influence student products. If we can reconstruct teacher behavior to obtain rather major increments in student scores on achievement tests, we would indeed welcome such an outcome. To obtain accurate and predictive data on shaping student academic behavior is a first step in the clarifying of the chain of processes, that if scientifically established, can become an important base for preservice and inservice teacher education programs. As a first step to further this end, the present version of Our Class and Its Work holds promise of making more specific both the teacher behaviors nad their attributable influence on student academic behaviors in separate subject areas.

Notes

1. Three items from the 53-item instrument were eliminated because these items proved to be unreliable when analyzing the reliability of the questionnaire.
2. This scale was one of the original scales that was removed after our factor analysis of this instrument.
3. We wish to acknowledge Sue Rasher for providing valuable assistance in the preliminary analyses of the data and Diane Schiller for her assistance in aiding in data gathering.

References

Anderson, G. J., Walberg, H. J., & Welch, W. Curriculum effects on the social climate of learning: A new representation of discriminant functions. American Educational Research Journal, 1969, 6, 315-328.

Anderson, G. & Walberg, H. Classroom climate and group learning. International Journal of Educational Sciences. 1968, 2, 175-180.

Berliner, D. Tempus educare. In P. Peterson & W. Walberg (Eds.) Research on Teaching: Concepts, Findings, and Implications. Berkeley, California: McCutchan Publishing Co., 1979.

Berliner, D. C. Impediments to the study of teacher effectiveness. Journal of Teacher Education, 1976, 27, 5-13.

Brophy, J. E. Using observation to improve your teaching. Institute for Research on Teaching, Michigan State University, 1979.

Brophy, J. E. & Everston, C. M. Learning from teaching: A development perspective. Boston: Allyn & Bacon, 1976.

Brophy, J. E. Teacher behavior and its effects. Journal of Educational Psychology. 1979, 71, 733-750.

Brownell, W. A. Learning theory and educational practice. Journal of Educational Research, 1948, 41, 481-497.

Coleman, J. Methods and results in the IEA studies of effects of school on learning. Review of Educational Research, 1975, 45, 355-386.

Dunkin, M. J. & Biddle, B. J. The study of teaching. New York: Holt, Rinehart, & Winston, 1974.

Eash, M. J., Rasher, S. P., & Waxman, H. C. Evaluation teacher behavior from student perceptions: Development of an instrument. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, April, 1979.

Eash, M. J. & Talmage, H. Evaluation of learning environments. TM Report N.43 (Princeton, N. J.: ETS Tests, Measurements, Evaluation Clearinghouse, 1975).

Evertson, C., Anderson, L., & Brophy, J. Texas Junior High School study: Final report of process-outcome relationhips. Report no. 4061. Austin: Research & Development Center for Teacher Education, University of Texas, 1978.

Gage, N. L., Runkel, P. J., & Chatterjee, B. B. Changing teacher behavior through feedback from pupils: An application of equilibrium theory. In W. W. Charters, Jr., & N. L. Gage (Eds.), Readings in the social psychology of education. Boston: Allyn & Bacon, 1963.

Gage, N. L. The scientific basis of the art of teaching. New York: Teachers College Press, 1978.

Gage, N. L. The generality of dimensions of teaching. In P. L. Peterson and H. J. Walberg, (Eds.) Research on Teaching: Concepts, findings, & implications. Berkeley, Calif.: McCutchan, 1979.

Good, T. L. & Brophy, J. E. Changing teacher and student behavior: An empirical investigation. Journal of Educational Psychology, 1978, 70, 200-208.

Good, T. L. Teacher effectiveness in the elementary school. Journal of Teacher Education, 1979, 32, 52-64.

Korb, R. The validity of student assessment of teacher performance. Paper presented at the meeting of the American Educational Research Association, New York, April, 1977.

McDonald, F. J. & Elias, P. The effects of teaching performance on pupil learning. Beginning Teacher Evaluation Study: Phase II, Final report, Vol. I. Princeton, N. J.: Educational Testing Service, 1976.

Medley, D. E. The effectiveness of teachers. In P. Peterson & H. Walberg (Eds.), Research on teaching: Concepts, findings, and implications. Berkeley, California: McCutchan Publishing Co., 1979.

Medley, D. M. Teacher competence and teacher effectiveness. Washington D. C.: American Association of Colleges for Teacher Education, 1977.

Moore, J., Schaut, J., & Fritzges, C. Evaluation of the effects of feedback associated with a problem-solving approach to instruction on teacher and student behavior. Journal of Educational Psychology, 1978, 70, 200-208.

Moos, R. Educational climates. In H. Walberg (Ed.), Educational environments and effects. Berkeley, California: McCutchan Publishing Co., 1979.

Neilsen, H. D. & Kirk, D. H. Classroom climates. In H. J. Walberg, (Ed.), Evaluating educational performance. Berkeley, Cal.: McCutchan, 1974.

Rosenshine, B. Teaching behaviors & student achievement. England: National Foundation for Educational Research in England and Wales, 1971.

Rosenshine, B. Evaluation of classroom instruction. Review of Educational Research. 1970, 40, 279-300.

Rosenshine, B. Content, time and direct instruction. In P. Peterson and H. Walberg (Eds.), Research on teaching: Concepts, findings, and implications. Berkeley, California: McCutchan Publishing Co., 1979.

Rosenshine, B. & Furst, N. The use of direct observation to study teaching. In R. Travers (Ed.) The second handbook of research on teaching, Chicago Il.: Rand McNally, 1973.

Schulman, L. S. The psychology of school subjects: A Premature obituary? Journal of Research in Science Teaching. 1974, 11, 319-339.

Stallings, J. How instructional processes relate to child outcomes in a national study of Follow Through. Journal of Teacher Education. 1976, 27, 43-47.

Strayrook, N., & Corno, L., & Winne, P. Path analyses relating student perceptions of teacher behavior to student achievement. Journal of Education. 1978, 29, 51-56.

Talmage, H. and Eash, M. Curriculum instruction and materials. In P. Peterson and H. Walberg (Eds.) Research on teaching: Concepts, findings, and implications. Berkeley, California: McCutchan Publishing Co., 1979.

Walberg, H. Psychology of learning environments: Behavioral, structural or perceptual? In L. Schulman (Ed.), Review of Educational Research, Vol. 4 Itasca, Il.: F. E. Peacock, 1976.

Waxman, H. and Walberg, H. A Review of reviews on teacher effectiveness. Evaluation in Education. In press.